

Amendments to the Claims:

Please enter the following amendments and cancellations without prejudice or disclaimer. This listing of claims replaces all prior versions and listings of claims in the application. Amendments are shown relative to Applicants' Response mailed November 5, 2004.

Listing of Claims:

1.- 8. (Canceled)

9. (Currently amended) A BLyS binding polypeptide comprising an amino acid sequence of the following formula according to one of the following formulae:

(H) Cys-X₅-Phe-X₇-Trp-Glu-Cys (residues 4-10 of SEQ ID NO:1),

wherein

X₅ is Phe, Trp, or Tyr; and

X₇ is Pro or Tyr; or

(I) Cys-X₂-X₃-X₄-X₅-X₆-X₇-Cys (SEQ ID NO:9),

wherein

X₂ is Asp, Ile, Leu, or Tyr;

X₃ is Arg, Asp, Glu, His, Ile, Leu, Lys, Phe, Pro, Tyr, or Val;

X₄ is His, Leu, Lys, or Phe;

X₅ is Leu, Pro, or Thr;

X₆ is Arg, Asn, Gly, His, Ile, Lys, Met, or Trp; and

X₇ is Ala, Asn, Gln, Glu, Gly, His, Ile, Leu, Met, Phe, Ser, Trp, Tyr, or Val; or

(J) Cys-X₂-X₃-X₄-X₅-X₆-X₇-X₈-Cys (SEQ ID NO:10),

wherein

X₂ is Asn[,] or Asp, Pro, Ser, or Thr;

X₃ is Arg, Asp, Ile, Leu, Met, Pro, or Val;

X₄ is Ala, Ile, Leu, Pro, Thr, or Val;

X₅ is Asn, His, Ile, Leu, Lys, Phe, or Thr;

X₆ is Asn, Glu, Gly, His, Leu, Lys, Met, Pro, or Thr;

X₇ is Arg, Asn, Asp, Gln, Glu, Gly, Ile, Lys, Met, Pro, Ser, or Trp; and

X₈ is Arg, Glu, Gly, Lys, Phe, Ser, Trp, or Tyr; or

(K) Cys-X₂-X₃-X₄-X₅-X₆-X₇-X₈-X₉-Cys (SEQ ID NO:11),

wherein

X₂ is Asp, Gln, His, Ile, Leu, Lys, Met, Phe, or Thr;

X₃ is His, Ile, Leu, Met, Phe, Pro, Trp, or Tyr;

X₄ is Asp, His, Leu, or Ser;

X₅ is Ala, Arg, Asp, Glu, Leu, Phe, Pro, or Thr;

X₆ is Ala, Arg, Asn, or Leu;

X₇ is Ile, Leu, Met, Pro, Ser, or Thr;

X₈ is Ala, Arg, Asn, Gly, His, Lys, Ser, or Tyr; and

X₉ is Ala, Arg, Asn, Gln, Leu, Met, Ser, Trp, Tyr, or Val; or

(L) Cys-X₂-X₃-X₄-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-Cys (SEQ ID NO:12),

wherein

X₂ is Arg, Asn, Gln, Glu, His, Leu, Phe, Pro, Trp, Tyr, or Val;

X₃ is Arg, Asp, Gln, Gly, Ile, Lys, Phe, Thr, Trp or Tyr;

X₄ is Ala, Arg, Asp, Glu, Gly, Leu, Ser, or Tyr;

X₅ is Asp, Gln, Glu, Leu, Met, Phe, Pro, Ser, or Tyr;

X₆ is Asp, Leu, Pro, Thr, or Val;

X₇ is Arg, Gln, His, Ile, Leu, Lys, Met, Phe, Thr, Trp or Tyr;

X₈ is Ala, Arg, Asn, Gln, Glu, His, Leu, Lys, Met, or Thr;

X₉ is Ala, Asn, Gln, Gly, Leu, Lys, Phe, Pro, Thr, Trp, or Tyr;

X₁₀ is Ala, Arg, Gln, His, Lys, Met, Phe, Pro, Thr, Trp, or Tyr; and

X₁₁ is Arg, Gln, Glu, Gly, His, Leu, Met, Phe, Pro, Ser, Thr, Tyr, or Val; or

(M) Cys-X₂-X₃-X₄-X₅-X₆-X₇-X₈-Cys (SEQ ID NO:10),

wherein

X₂ is Asn, Asp, Pro, Ser, or Thr;

X₃ is Arg, Asp, Ile, Leu, Met, Pro, or Val;

X₄ is Ala, Ile, Leu, Pro, Thr, or Val;

X₅ is Asn, His, Ile, Leu, Lys, Phe, or Thr;

X₆ is Asn, Glu, Gly, His, Leu, Lys, Met, Pro, or Thr;

X₇ is Arg, Asn, Asp, Gln, Glu, Gly, Ile, Lys, Met, Pro, Ser, or Trp; and

X₈ is Gly, Lys, Phe, Ser, Trp, or Tyr.

10. (Previously presented) The polypeptide according to claim 9, wherein

(a) said polypeptide comprises an amino acid sequence of the formula: Cys-X₅-Phe-X₇-Trp-Glu-Cys (residues 4-10 of SEQ ID NO:1), and the following amino acid positions are independently selected as follows: X₂ is Tyr; X₄ is Pro; or combinations of such selections; or

(b) said polypeptide comprises an amino acid sequence of the following formula: Cys-X₂-X₃-X₄-X₅-X₆-X₇-Cys (SEQ ID NO:9), and the following amino acid positions are independently selected as follows: X₂ is Asp or Leu; X₃ is Glu or Leu; X₄ is His or Leu; X₅ is Thr or Pro; X₆ is Lys; or combinations of such selections; or

(c) said polypeptide comprises an amino acid sequence of the following formula: Cys-X₂-X₃-X₄-X₅-X₆-X₇-X₈-Cys (SEQ ID NO:10), and the following amino acid positions are independently selected as follows: X₂ is Asp; X₃ is Ile; X₄ is Val or Leu; X₅ is Thr; X₆ is Leu; X₈ is Ser; or combinations of such selections; or

(d) said polypeptide comprises an amino acid sequence of the following formula:

Cys-X₂-X₃-X₄-X₅-X₆-X₇-X₈-X₉-Cys (SEQ ID NO:11), and the following amino acid positions are independently selected as follows: X₄ is Asp; X₅ is Glu or Pro; X₆ is Leu; X₇ is Thr; or combinations of such selections; or

(e) said polypeptide comprises an amino acid sequence of the following formula: Cys-X₂-X₃-X₄-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-Cys (SEQ ID NO:12), and the following amino acid positions are independently selected as follows: X₂ is Trp, Tyr, or Val; X₃ is Asp; X₄ is Asp; X₅ is Leu; X₆ is Leu or Thr; X₇ is Lys or Thr; X₈ is Arg or Leu; X₉ is Thr or Trp; X₁₀ is Met or Phe; X₁₁ is Val; or combinations of such selections.

11. (Currently amended) A BLyS binding polypeptide comprising an amino acid sequence of the following formula:

(A) X₁-X₂-X₃-Cys-X₅-Phe-X₇-Trp-Glu-Cys-X₁₁-X₁₂-X₁₃ (SEQ ID NO:1),

wherein

X₁ is Ala, Asn, Lys, or Ser;

X₂ is Ala, Glu, Met, Ser, or Val;

X₃ is Ala, Asn, Lys, or Pro;

X₅ is Phe, Trp, or Tyr;

X₇ is Pro or Tyr;

X₁₁ is Ala, Gln, His, Phe, or Val;

X₁₂ is Asn, Gln, Gly, His, Ser, or Val; and

X₁₃ is Ala, Asn, Gly, Ile, Pro, or Ser; or

(B) X₁-X₂-X₃-Cys-X₅-X₆-X₇-X₈-X₉-X₁₀-Cys-X₁₂-X₁₃-X₁₄ (SEQ ID NO:2), wherein

X₁ is Ala, Asp, Gln, Glu, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr, Val, or is absent;

X₂ is Ala, Asn, Asp, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr, or Val;

X₃ is Ala, Arg, Asn, Asp, Gln, Glu, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Trp, Tyr, or Val;

X₅ is Asp, Ile, Leu, or Tyr; X₆ is Arg, Asp, Glu, His, Ile, Leu, Lys, Phe, Pro, Tyr, or Val;

X₇ is His, Leu, Lys, or Phe; X₈ is Leu, Pro, or Thr;

X₉ is Arg, Asn, Gly, His, Ile, Lys, Met, or Trp;

X₁₀ is Ala, Gln, Glu, Gly, His, Ile, Leu, Met, Phe, Ser, Trp, Tyr, or Val;

X₁₂ is Asp, Gln, Glu, Gly, Ile, Leu, Lys, Phe, Ser, Trp, Tyr, or Val;

X₁₃ is Ala, Arg, Asn, Asp, Gln, Glu, Gly, His, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr, or Val; and

X₁₄ is Ala, Arg, Asn, Asp, Gln, Glu, Gly, His, Ile, Leu, Lys, Phe, Pro, Trp, Tyr, Val, or is absent; or

(C) ~~X₁-X₂-X₃-Cys-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-Cys-X₁₃-X₁₄-X₁₅-X₁-X₂-X₃-Cys-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-Cys-X₁₃-X₁₄-X₁₅~~ (SEQ ID NO:3),

wherein

X₁ is Ala, Arg, Asn, Asp, Leu, Lys, Phe, Pro, Ser, or Thr;

X₂ is Asn, Asp, Gln, His, Ile, Lys, Pro, Thr, or Trp;

X₃ is Ala, Arg, Asn, Gln, Glu, His, Phe, Pro, or Thr;

X₅ is Asn, Asp, Pro, Ser, or Thr;

X₆ is Arg, Asp, Ile, Leu, Met, Pro, or Val;

X₇ is Ala, Ile, Leu, Pro, Thr, or Val;

X₈ is Asn, His, Ile, Leu, Lys, Phe, or Thr;

X₉ is Asn, Glu, Gly, His, Leu, Lys, Met, Pro, or Thr;

X₁₀ is Arg, Asn, Asp, Gln, Glu, Gly, Ile, Lys, Met, Pro, Ser, or Trp;

X₁₁ is Arg, Glu, Gly, Lys, Phe, Ser, Trp, or Tyr;

X₁₃ is Gln, Glu, Ile, Leu, Phe, Pro, Ser, Tyr, or Val;

X₁₄ is Asn, Gly, Ile, Phe, Pro, Thr, Trp, or Tyr; and

X₁₅ is Asn, Asp, Glu, Leu, Lys, Met, Pro, or Thr; or

(D) X₁-X₂-X₃-Cys-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-X₁₂-Cys-X₁₄-X₁₅-X₁₆ (SEQ ID NO:4),

wherein

X₁ is Asn, Asp, His, Leu, Phe, Pro, Ser, Tyr, or is absent;

X₂ is Arg, Asn, Asp, His, Phe, Ser, or Trp;

X₃ is Asn, Asp, Leu, Pro, Ser, or Val;

X₅ is Asp, Gln, His, Ile, Leu, Lys, Met, Phe, or Thr;

X₆ is His, Ile, Leu, Met, Phe, Pro, Trp, or Tyr;
X₇ is Asp, His, Leu, or Ser;
X₈ is Ala, Arg, Asp, Glu, Leu, Phe, Pro, or Thr;
X₉ is Ala, Arg, Asn, or Leu;
X₁₀ is Ile, Leu, Met, Pro, Ser, or Thr;
X₁₁ is Ala, Arg, Asn, Gly, His, Lys, Ser, or Tyr;
X₁₂ is Ala, Arg, Asn, Gln, Leu, Met, Ser, Trp, Tyr, or Val;
X₁₄ is Asp, Gly, Leu, Phe, Tyr, or Val; and
X₁₅ is Asn, His, Leu, Pro, or Tyr; and X₁₆ is Asn, Asp, His, Phe, Ser, or Tyr; or
(E) X₁-X₂-X₃-Cys-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-X₁₂-X₁₃-X₁₄-Cys-X₁₆-X₁₇-X₁₈ (SEQ ID NO:5),

wherein

X₁ is Arg, Asp, Gly, His, Leu, Phe, Pro, Ser, Trp, Tyr, or is absent;
X₂ is Ala, Arg, Asn, Asp, Gly, Pro, Ser, or is absent;
X₃ is Arg, Asn, Gln, Glu, Gly, Lys, Met, Pro, Trp or Val;
X₅ is Arg, Asn, Gln, Glu, His, Leu, Phe, Pro, Trp, Tyr, or Val;
X₆ is Arg, Asp, Gln, Gly, Ile, Lys, Phe, Thr, Trp or Tyr;
X₇ is Ala, Arg, Asp, Glu, Gly, Leu, Ser, or Tyr;
X₈ is Asp, Gln, Glu, Leu, Met, Phe, Pro, Ser, or Tyr;
X₉ is Asp, Leu, Pro, Thr, or Val;
X₁₀ is Arg, Gln, His, Ile, Leu, Lys, Met, Phe, Thr, Trp or Tyr;
X₁₁ is Ala, Arg, Asn, Gln, Glu, His, Leu, Lys, Met, or Thr;
X₁₂ is Ala, Asn, Gln, Gly, Leu, Lys, Phe, Pro, Thr, Trp, or Tyr;
X₁₃ is Ala, Arg, Gln, His, Lys, Met, Phe, Pro, Thr, Trp, or Tyr;
X₁₄ is Arg, Gln, Glu, Gly, His, Leu, Met, Phe, Pro, Ser, Thr, Tyr, or Val;
X₁₆ is Arg, Asp, Gly, His, Lys, Met, Phe, Pro, Ser, or Trp;
X₁₇ is Arg, Asn, Asp, Gly, His, Phe, Pro, Ser, Trp or Tyr; and
X₁₈ is Ala, Arg, Asn, Asp, His, Leu, Phe, or Trp; or

(F) X₁-X₂-X₃-X₄-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-X₁₂ (SEQ ID NO:6),

wherein

X₁ is Ala, Arg, Gly, His, Leu, Lys, Met, Phe, Trp, Tyr, or Val;

X₂ is Ala, Arg, Gln, His, Ile, Leu, Phe, Thr, Trp, or Tyr;

X₃ is Ala, Asp, Lys, Phe, Thr, Trp or Tyr;

X₄ is Arg, Asp, Gln, Lys, Met, Phe, Pro, Ser, Tyr, or Val;

X₅ is Asp, Leu, Lys, Phe, Pro, Ser, or Val;

X₆ is His, Ile, Leu, Pro, Ser, or Thr;

X₇ is Arg, Gly, His, Leu, Lys, Met, or Thr;

X₈ is Ala, Arg, Asn, Ile, Leu, Lys, Met, or Thr;

X₉ is Ala, Asn, Arg, Asp, Glu, Gly, His, Leu, Met, Ser, Trp, Tyr, or Val;

X₁₀ is Ile, Leu, Phe, Ser, Thr, Trp, Tyr, or Val;

X₁₁ is Ala, Arg, Gly, His, Ile, Leu, Lys, Pro, Ser, Thr, Trp, Tyr, or Val; and

X₁₂ is Arg, Asp, His, Leu, Lys, Met, Phe, Pro, Ser, Trp, Tyr, or Val; or

(G) X₁-X₂-X₃-X₄-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-X₁₂-X₁₃ (SEQ ID NO:7),

wherein

X₁ is Asp, Gln, Glu, Gly, His, Lys, Met, or Trp;

X₂ is Arg, Gln, His, Ile, Leu, or Pro;

X₃ is Asp, Gly, Ile, Lys, Thr, Tyr or Val;

X₄ is Asn, Asp, Gln, Glu, Met, Pro, Ser, or Tyr;

X₅ is Asn, Asp, His, Ile, Leu, Met, Pro, Thr or Val;

X₆ is Asp, Glu, His, Leu, Lys, Pro, or Val;

X₇ is Arg, Asn, Gln, His, Ile, Leu, Met, Pro, or Thr;

X₈ is Gln, Gly, His, Leu, Met, Ser, or Thr;

X₉ is Asn, Gln, Gly, His, Leu, Lys, Ser, or Thr;

X₁₀ is Ala, Gly, Ile, Leu, Lys, Met, or Phe;

X₁₁ is Ala, Glu, His, Ile, Leu, Met, Ser, Thr, Trp, Tyr, or Val;

X₁₂ is Arg, Gln, Glu, Gly, His, Ile, Lys, Tyr, or Val; and

X₁₃ is Arg, Asn, Glu, His, Ile, Ser, Thr, Trp, or Val.

12. (Original) The BLyS binding polypeptide according to claim 11, wherein

(a) said polypeptide includes an amino acid sequence of the following formula: X₁-X₂-X₃-Cys-X₅-Phe-X₇-Trp-Glu-Cys-X₁₁-X₁₂-X₁₃ (SEQ ID NO:1), and the following amino acid positions are independently selected as follows: X₃ is Lys; X₅ is Tyr; X₇ is Pro; X₁₁ is Ala, Gln, His, Phe, or Val; X₁₂ is Asn, Gln, Gly, His, Ser, or Val; X₁₃ is Ala, Asn, Gly, Ile, Pro, or Ser; or combinations of such selections; or

(b) said polypeptide includes an amino acid sequence of the following formula: X₁-X₂-X₃-Cys-X₅-X₆-X₇-X₈-X₉-X₁₀-Cys-X₁₂-X₁₃-X₁₄ (SEQ ID NO:2), and the following amino acid positions are independently selected as follows: X₃ is Asp; X₅ is Asp or Leu; X₆ is Glu or Leu; X₇ is His or Leu; X₈ is Thr or Pro; X₉ is Lys; or combinations of such selections; or

(c) said polypeptide includes an amino acid sequence of the following formula: X₁-X₂-X₃-Cys-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-Cys-X₁₃-X₁₄-X₁₅ (SEQ ID NO:3), and the following amino acid positions are independently selected as follows: X₃ is Ala; X₅ is Asp; X₆ is Ile; X₇ is Val or Leu; X₈ is Thr; X₉ is Leu; X₁₁ is Ser; X₁₃ is Val; X₁₅ is Glu or Pro; or combinations of such selections; or

(d) said polypeptide includes an amino acid sequence of the following formula: X₁-X₂-X₃-Cys-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-X₁₂-Cys-X₁₄-X₁₅-X₁₆ (SEQ ID NO:4), and the following amino acid positions are independently selected as follows: X₁ is Ser; X₂ is Arg; X₃ is Asn or Asp; X₇ is Asp; X₈ is Glu or Pro; X₉ is Leu; X₁₀ is Thr; X₁₄ is Leu; X₁₅ is His, Leu, or Pro; X₁₆ is Asp or Ser; or combinations of such selections; or

(e) said polypeptide includes an amino acid sequence of the following formula: X₁-X₂-X₃-Cys-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-X₁₂-X₁₃-X₁₄-Cys-X₁₆-X₁₇-X₁₈ (SEQ ID NO:5), and the following amino acid positions are independently selected as follows: X₁ is Arg; X₂ is Asn, Asp, Gly, or Pro; X₃ is Gly or Met; X₅ is Trp, Tyr, or Val; X₆ is Asp; X₇ is Asp; X₈ is Leu; X₉ is Leu or Thr; X₁₀ is Lys or Thr; X₁₁ is Arg or Leu; X₁₂ is Thr or Trp; X₁₃ is Met or Phe; X₁₄ is Val; X₁₆ is Met; X₁₇ is Arg, His, or Tyr; X₁₈ is Asn or His; or combinations of such selections; or

(f) said polypeptide includes an amino acid sequence of the following formula: X₁-X₂-X₃-X₄-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-X₁₂ (SEQ ID NO:6), and the following amino acid positions are independently selected as follows: X₁ is Gly, Tyr, or Val; X₂ is His or Tyr; X₃ is Asp or Tyr; X₄ is Asp or Gln; X₅ is Leu or Ser; X₆ is Leu or Thr; X₇ is Lys or Thr; X₈ is Leu or Lys; X₉ is Met or Ser; X₁₀ is Thr or Leu; X₁₁ is Pro or Thr; X₁₂ is Arg or Pro; or combinations of such selections; or

(g) said polypeptide includes an amino acid sequence of the following formula: X₁-X₂-X₃-X₄-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-X₁₂-X₁₃ (SEQ ID NO:7), and the following amino acid positions are independently selected as follows: X₁ is Glu or Lys; X₂ is His or Pro; X₃ is Tyr; X₄ is Asp or Gln; X₅ is Asn or Thr; X₆ is Asp or Pro; X₇ is Ile or Pro; X₈ is Leu or Thr; X₉ is Lys; X₁₀ is Gly or Met; X₁₁ is Ala or Thr; X₁₂ is Arg or His; X₁₃ is His; or combinations of such selections.

13. (Withdrawn) The BLyS binding polypeptide according to claim 11, comprising an amino acid sequence selected from the group consisting of SEQ ID NOs:20-162 as depicted in Tables 1-8.

14. (Currently amended) The BLyS binding polypeptide according to claim 11, comprising an amino acid sequence selected from the group consisting of:

AGKEPCYFYWECAVSGPGPEGGGK (SEQ ID NO:163),
AGVPFCDLLTKJICFEAGPGPEGGGK AGVPFCDLLTKHCFEAGPGPEGGGK (SEQ ID NO:164), GSSRLCHMDELTHVCVFAPPGPEGGGK (SEQ ID NO:165),
GDGGNCYTDSLTKLHFCMGDEPGPEGGGK (SEQ ID NO:166),
GYDVLTKLYFVPGGPGPEGGGK (SEQ ID NO:167), and
WTDSLTLWFPDGPGPEGGGK[[.]] (SEQ ID NO:168).

15 – 23. (Canceled)

24. (Withdrawn- currently amended) A method for detecting BLyS or a BLyS-like polypeptide in a solution suspected of containing it comprising:

(a) contacting said solution with a polypeptide according to claim any of claims 1, 9 or 11, and (b) determining whether binding has occurred between said polypeptide and BLyS or a BLyS-like polypeptide.

25. (Withdrawn- currently amended) A method for purifying BLyS or a BLyS-like polypeptide comprising:

contacting a solution containing BLyS or a BLyS-like polypeptide to a support that comprises, immobilized thereon, a BLyS polypeptide according to claim 9 or 11 ~~claims 1, 9, or 11~~; and,

separating the solution from said support.

26. (Withdrawn- currently amended) BLyS separation media comprising:

(a) a chromatographic matrix material, and, immobilized thereon,
(b) a BLyS binding molecule comprising a BLyS binding polypeptide as defined in claim 9 or 11 ~~any of claims 1, 9, or 11~~.

27. (Withdrawn) The BLyS separation media according to claim 26, comprising:

(a) a chromatographic matrix material, and, immobilized thereon,
(b) a BLyS binding molecule comprising a BLyS binding polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NOs:20-162 and 186-435, as depicted in Tables 1-8 and 14.

28. (Withdrawn) A method for separating BLyS or a BLyS-like polypeptide from a solution containing it comprising:

(a) contacting said solution with separation media as defined in claim 26;

- (b) removing unbound material; and
- (c) eluting bound BLyS or BLyS-like polypeptide from said separation media.

29.- 34. (Canceled)

35. (Withdrawn- currently amended) A polynucleotide encoding a BLyS binding polypeptide of the formula:

(A) $X_1-X_2-X_3-\text{Cys}-X_5-\text{Phe}-X_7-\text{Trp}-\text{Glu}-\text{Cys}-X_{11}-X_{12}-X_{13}$ (SEQ ID NO:1),

wherein

X_1 is Ala, Asn, Lys, or Ser;

X_2 is Ala, Glu, Met, Ser, or Val;

X_3 is Ala, Asn, Lys, or Pro;

X_5 is Phe, Trp, or Tyr;

X_7 is Pro or Tyr;

X_{11} is Ala, Gln, His, Phe, or Val;

X_{12} is Asn, Gln, Gly, His, Ser, or Val; and

X_{13} is Ala, Asn, Gly, Ile, Pro, or Ser; or

(B) $X_1-X_2-X_3-\text{Cys}-X_5-X_6-X_7-X_8-X_9-X_{10}-\text{Cys}-X_{12}-X_{13}-X_{14}$ (SEQ ID NO:2),

wherein

X_1 is Ala, Asp, Gln, Glu, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr, Val, or is absent;

X_2 is Ala, Asn, Asp, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr, or Val;

X_3 is Ala, Arg, Asn, Asp, Gln, Glu, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Trp, Tyr, or Val;

X_5 is Asp, Ile, Leu, or Tyr;

X_6 is Arg, Asp, Glu, His, Ile, Leu, Lys, Phe, Pro, Tyr, or Val;

X_7 is His, Leu, Lys, or Phe;

X₈ is Leu, Pro, or Thr;

X₉ is Arg, Asn, Gly, His, Ile, Lys, Met, or Trp;

X₁₀ is Ala, Gln, Glu, Gly, His, Ile, Leu, Met, Phe, Ser, Trp, Tyr, or Val;

X₁₂ is Asp, Gln, Glu, Gly, Ile, Leu, Lys, Phe, Ser, Trp, Tyr, or Val;

X₁₃ is Ala, Arg, Asn, Asp, Gln, Glu, Gly, His, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr, or Val; and

X₁₄ is Ala, Arg, Asn, Asp, Gln, Glu, Gly, His, Ile, Leu, Lys, Phe, Pro, Trp, Tyr, Val, or is absent; or

(C) X₁-X₂-X₃-Cys-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-Cys-X₁₃-X₁₄-X₁₅ (SEQ ID NO:3),

wherein

X₁ is Ala, Arg, Asn, Asp, Leu, Lys, Phe, Pro, Ser, or Thr;

X₂ is Asn, Asp, Gln, His, Ile, Lys, Pro, Thr, or Trp;

X₃ is Ala, Arg, Asn, Gln, Glu, His, Phe, Pro, or Thr;

X₅ is Asn, Asp, Pro, Ser, or Thr;

X₆ is Arg, Asp, Ile, Leu, Met, Pro, or Val;

X₇ is Ala, Ile, Leu, Pro, Thr, or Val;

X₈ is Asn, His, Ile, Leu, Lys, Phe, or Thr;

X₉ is Asn, Glu, Gly, His, Leu, Lys, Met, Pro, or Thr;

X₁₀ is Arg, Asn, Asp, Gln, Glu, Gly, Ile, Lys, Met, Pro, Ser, or Trp;

X₁₁ is Arg, Glu, Gly, Lys, Phe, Ser, Trp, or Tyr;

X₁₃ is Gln, Glu, Ile, Leu, Phe, Pro, Ser, Tyr, or Val;

X₁₄ is Asn, Gly, Ile, Phe, Pro, Thr, Trp, or Tyr; and

X₁₅ is Asn, Asp, Glu, Leu, Lys, Met, Pro, or Thr; or

(D) ~~X₁-X₂-X₃-Cys-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-X₁₂-Cys-X₁₄-X₁₅-X₁₆~~ X₁-X₂-X₃-Cys-X₅-X₆-
X₇-X₈-X₉-X₁₀-X₁₁-X₁₂-Cys-X₁₄-X₁₅-X₁₆ (SEQ ID NO:4),

wherein

X₁ is Asn, Asp, His, Leu, Phe, Pro, Ser, Tyr, or is absent;

X₂ is Arg, Asn, Asp, His, Phe, Ser, or Trp;

X₃ is Asn, Asp, Leu, Pro, Ser, or Val;
X₅ is Asp, Gln, His, Ile, Leu, Lys, Met, Phe, or Thr;
X₆ is His, Ile, Leu, Met, Phe, Pro, Trp, or Tyr;
X₇ is Asp, His, Leu, or Ser;
X₈ is Ala, Arg, Asp, Glu, Leu, Phe, Pro, or Thr;
X₉ is Ala, Arg, Asn, or Leu;
X₁₀ is Ile, Leu, Met, Pro, Ser, or Thr;
X₁₁ is Ala, Arg, Asn, Gly, His, Lys, Ser, or Tyr;
X₁₂ is Ala, Arg, Asn, Gln, Leu, Met, Ser, Trp, Tyr, or Val;
X₁₄ is Asp, Gly, Leu, Phe, Tyr, or Val;
X₁₅ is Asn, His, Leu, Pro, or Tyr; and
X₁₆ is Asn, Asp, His, Phe, Ser, or Tyr; or
(E) X₁-X₂-X₃-Cys-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-X₁₂-X₁₃-X₁₄-Cys-X₁₆-X₁₇-X₁₈ (SEQ ID NO:5),

wherein

X₁ is Arg, Asp, Gly, His, Leu, Phe, Pro, Ser, Trp, Tyr, or is absent;
X₂ is Ala, Arg, Asn, Asp, Gly, Pro, Ser, or is absent;
X₃ is Arg, Asn, Gln, Glu, Gly, Lys, Met, Pro, Trp, or Val;
X₅ is Arg, Asn, Gln, Glu, His, Leu, Phe, Pro, Trp, Tyr, or Val;
X₆ is Arg, Asp, Gln, Gly, Ile, Lys, Phe, Thr, Trp or Tyr;
X₇ is Ala, Arg, Asp, Glu, Gly, Leu, Ser, or Tyr;
X₈ is Asp, Gln, Glu, Leu, Met, Phe, Pro, Ser, or Tyr;
X₉ is Asp, Leu, Pro, Thr, or Val;
X₁₀ is Arg, Gln, His, Ile, Leu, Lys, Met, Phe, Thr, Trp, or Tyr;
X₁₁ is Ala, Arg, Asn, Gln, Glu, His, Leu, Lys, Met, or Thr;
X₁₂ is Ala, Asn, Gln, Gly, Leu, Lys, Phe, Pro, Thr, Trp, or Tyr;
X₁₃ is Ala, Arg, Gln, His, Lys, Met, Phe, Pro, Thr, Trp, or Tyr;
X₁₄ is Arg, Gln, Glu, Gly, His, Leu, Met, Phe, Pro, Ser, Thr, Tyr, or Val;

X₁₆ is Arg, Asp, Gly, His, Lys, Met, Phe, Pro, Ser, or Trp;
X₁₇ is Arg, Asn, Asp, Gly, His, Phe, Pro, Ser, Trp, or Tyr; and
X₁₈ is Ala, Arg, Asn, Asp, His, Leu, Phe, or Trp; or
(F) X₁-X₂-X₃-X₄-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-X₁₂ (SEQ ID NO:6),
wherein

X₁ is Ala, Arg, Gly, His, Leu, Lys, Met, Phe, Trp, Tyr, or Val;
X₂ is Ala, Arg, Gln, His, Ile, Leu, Phe, Thr, Trp, or Tyr;
X₃ is Ala, Asp, Lys, Phe, Thr, Trp, or Tyr;
X₄ is Arg, Asp, Gln, Lys, Met, Phe, Pro, Ser, Tyr, or Val;
X₅ is Asp, Leu, Lys, Phe, Pro, Ser, or Val;
X₆ is His, Ile, Leu, Pro, Ser, or Thr;
X₇ is Arg, Gly, His, Leu, Lys, Met, or Thr;
X₈ is Ala, Arg, Asn, Ile, Leu, Lys, Met, or Thr;
X₉ is Ala, Asn, Arg, Asp, Glu, Gly, His, Leu, Met, Ser, Trp, Tyr, or Val;
X₁₀ is Ile, Leu, Phe, Ser, Thr, Trp, Tyr, or Val;
X₁₁ is Ala, Arg, Gly, His, Ile, Leu, Lys, Pro, Ser, Thr, Trp, Tyr, or Val; and
X₁₂ is Arg, Asp, His, Leu, Lys, Met, Phe, Pro, Ser, Trp, Tyr, or Val; or
(G) X₁-X₂-X₃-X₄-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-X₁₂-X₁₃ (SEQ ID NO:7),
wherein

X₁ is Asp, Gln, Glu, Gly, His, Lys, Met, or Trp;
X₂ is Arg, Gln, His, Ile, Leu, or Pro;
X₃ is Asp, Gly, Ile, Lys, Thr, Tyr, or Val;
X₄ is Asn, Asp, Gln, Glu, Met, Pro, Ser, or Tyr;
X₅ is Asn, Asp, His, Ile, Leu, Met, Pro, Thr, or Val;
X₆ is Asp, Glu, His, Leu, Lys, Pro, or Val;
X₇ is Arg, Asn, Gln, His, Ile, Leu, Met, Pro, or Thr;
X₈ is Gln, Gly, His, Leu, Met, Ser, or Thr;
X₉ is Asn, Gln, Gly, His, Leu, Lys, Ser, or Thr;

X_{10} is Ala, Gly, Ile, Leu, Lys, Met, or Phe;
 X_{11} is Ala, Glu, His, Ile, Leu, Met, Ser, Thr, Trp, Tyr, or Val;
 X_{12} is Arg, Gln, Glu, Gly, His, Ile, Lys, Tyr, or Val; and
 X_{13} is Arg, Asn, Glu, His, Ile, Ser, Thr, Trp, or Val.

36 - 38. (Canceled)

39. (Previously presented) The polypeptide according to claim 9, wherein the polypeptide comprises an amino acid sequence according to formula H.

40. (Previously presented) The polypeptide according to claim 39, wherein the polypeptide comprises

X_1 - X_2 - X_3 -Cys- X_5 -Phe- X_7 -Trp-Glu-Cys- X_{11} - X_{12} - X_{13} (SEQ ID NO:1),

wherein

X_1 is Ala, Asn, Lys, or Ser;
 X_2 is Ala, Glu, Met, Ser, or Val;
 X_3 is Ala, Asn, Lys, or Pro;
 X_{11} is Ala, Gln, His, Phe, or Val;
 X_{12} is Asn, Gln, Gly, His, Ser, or Val; and
 X_{13} is Ala, Asn, Gly, Ile, Pro, or Ser.

41. (Withdrawn- currently amended) The polypeptide according to claim 40, wherein \underline{X}_1 [[X_3]] is Lys.

42. (Previously presented) The polypeptide according to claim 39, wherein X_5 is Tyr.

43. (Previously presented) The polypeptide according to claim 39, wherein X_7 is Tyr.

44. (Previously presented) The polypeptide according to claim 39, wherein X₅ is Tyr; and X₇ is Tyr.

45. (Previously presented) The polypeptide according to claim 39, that comprises SEQ ID NO:22, 23, 24, 25, or 26.

46. (Previously presented) The polypeptide according to claim 39, that comprises SEQ ID NO:27.

47. (Previously presented) The BLyS binding polypeptide according to claim 39, wherein the polypeptide comprises the sequence AGKEPCYFYWECAVSGPGPEGGGK (SEQ ID NO:163).

48. (Previously presented) The BLyS binding polypeptide of claim 9, wherein the polypeptide binds BLyS with an affinity less than 3 μM.

49. (Previously presented) The BLyS binding polypeptide of claim 39, wherein the polypeptide binds BLyS with an affinity less than 3 μM.

50. (Withdrawn) The BLyS binding polypeptide of claim 40, wherein the polypeptide binds BLyS with an affinity less than 3μM.

51. (Previously presented) The BLyS binding polypeptide of claim 9, wherein the polypeptide binds BLyS at least 12-fold better than the polypeptide binds streptavidin.

52. (Previously presented) The BLyS binding polypeptide of claim 39, wherein the polypeptide binds BLyS at least 12-fold better than the polypeptide binds streptavidin.

53. (Withdrawn) The BLyS binding polypeptide of claim 9, that comprises an amino acid sequence according to formula I.

54. (Withdrawn) The BLyS binding polypeptide of claim 53, that comprises SEQ ID NO:28.

55. (Withdrawn-currently amended) A method for purifying BLyS or a BLyS-like polypeptide, the method comprising:

contacting a solution containing BLyS or a BLyS-like polypeptide to a support that comprises, immobilized thereon, a BlyS binding polypeptide according to claim 39, 40, 41, 42, 43, 44, 45, 46 or 47; and,
separating the solution from the support.

56. (Withdrawn-currently amended) A nucleic acid comprising a sequence encoding the polypeptide of claim 9, 39, 40, 41, 42, 43, 44, 45, 46, or 47.

57. (New) The polypeptide according to claim 9, wherein the polypeptide comprises an amino acid sequence according to formula J.

58. (New) The polypeptide according to claim 9, wherein the polypeptide comprises an amino acid sequence according to formula K.

59. (New) The polypeptide according to claim 9, wherein the polypeptide comprises an amino acid sequence according to formula L.

60. (New) The polypeptide according to claim 9, wherein the polypeptide comprises an amino acid sequence according to formula M.